Executive Summary

This is the first Five-Year Review of the Lowry Landfill Superfund Site. Most, but not all, of the remedy components required by the Record of Decision and subsequent EPA remedial decision documents for this Site have been completed. The remedy components that have been completed (and accepted by the U.S. Environmental Protection Agency [EPA]) include:

- Well Plugging Program
- Wetlands Mitigation
- North Boundary Barrier Wall
- North Face Landfill Cover
- East/South/West Groundwater Barrier Wall
- North Toe Extraction System
- Landfill Gas Collection and Treatment System

The remedy components that are not yet complete and accepted by EPA are:

- New Water Treatment Plant
- Former Tire Pile Area Waste Pits

The following additional remedy elements are also part of the Site remedy:

- Surface Water Removal Action
- Landfill Cover Maintenance
- Groundwater Monitoring Wells and Compliance Program

The protectiveness of these additional remedy elements was also evaluated in the Five-Year Review process. The following remedy components or elements were found to be protective:

- Well Plugging Program
- Wetlands Mitigation
- Landfill Gas Collection and Treatment System
- North Face Landfill Cover
- Surface Water Removal Action

The protectiveness of the following components or elements of the sitewide remedy cannot be determined until further information is obtained:

- East/South/West Groundwater Barrier Wall
- North Boundary Barrier Wall System
- Groundwater Monitoring Wells and Compliance Program

It cannot be determined whether or not the East/South/West Groundwater Barrier component of the sitewide remedy is protective of human health and the environment. Potential contaminant migration in excess of Performance Standards and beyond the Point of Compliance has been observed at the following locations along the East/South/West Groundwater Barrier Wall: MW39-WD, MW51-WD, and the PM-15 area. At each of these locations, the Respondents to Administrative Order for Remedial Design/Remedial Action, EPA Docket No. CERCLA VIII-95-05, are investigating the nature and extent of the potential contamination. Although there does not appear to be an immediate threat to existing receptors (because no-one is currently drinking the ground water), this Five-Year Review concludes that this component of

the may not be effectively containing the Site-related chemicals as required by the Record of Decision and subsequent EPA remedial decision documents.

It cannot be determined whether or not the North Boundary Barrier Wall System component of the sitewide remedy is protective of human health and the environment. Contaminant concentrations as high as 22 times groundwater performance standards have been observed at MW37-WD, a North Boundary Barrier Wall compliance monitoring well. Exceedances of a lesser magnitude were also observed at three other North Boundary Barrier Wall monitoring wells: GW-114A, MW-1000, and U701-WD In response, the Respondents are performing a re-evaluation of the capture effectiveness of the North Boundary Barrier Wall System, including construction and sampling of additional monitoring wells, taking water-level measurements, and additional sampling of existing groundwater monitoring wells in this area. There does not appear to be an immediate threat to existing receptors (because no-one is currently drinking the ground water). However, because the current monitoring system is inadequate to verify that the North Boundary Barrier Wall System is effectively containing the Site-related chemicals as required by the Record of Decision and subsequent EPA remedial decision documents, this Five-Year Review concludes that it cannot be determined whether or not this component of the remedy is protective.

It cannot be determined whether or not the Groundwater Monitoring Wells and Compliance Program is protective of human health and the environment. The lateral spacing between individual monitoring wells is too large in some areas to demonstrate containment. The lignite layer has too few wells and possibly improperly positioned wells to demonstrate containment. The unweathered Dawson formation and Denver formation have too few monitoring wells to demonstrate containment.

The following additional remedy element was found to be protective in the short-term; however, in order for the remedy to be protective in the long-term, follow-up actions will need to be taken:

- Landfill Cover Maintenance

The Landfill Cover exhibits several closed depressions that have not been filled or otherwise corrected to provide drainage. This results in ponding and infiltration of precipitation rather than promoting runoff. Increased infiltration into the landfill mass creates additional contaminated ground water. This delays the expected ultimate stabilization of ground water within the landfill mass at a lower elevation than existed prior to remedy implementation. Follow-up actions need to be taken to eliminate these closed depressions and provide for proper cover drainage.

Finally, a few issues of concern that neither pose an immediate threat nor have the potential to allow uncontrolled migration of contaminants were identified. If these issues are left unaddressed, they could impact protectiveness in the future. This Five-Year Review provides recommendations for all issues of concern noted.

Because construction of the sitewide remedy has not yet been completed, a protectiveness statement for the sitewide remedy cannot be made at this time.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name *(from WasteLAN)*: Lowry Landfill		
EPA ID *(from WasteLAN)*: COD 980499248 Site 0800186		
Region: 8	**State:** CO	**City/County:** Arapahoe County

SITE STATUS	
NPL Status: ☒ Final ☐ Deleted ☐ Other (specify) _____	
Remediation Status (choose all that apply): ☒ Under Construction ☐ Operating ☐ Complete	
Multiple OUs? ☒ Yes ☐ No	**Construction Completion Date:** Not Applicable
Has site been put into reuse? ☐ Yes ☒ No	

REVIEW STATUS	
Reviewing Agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____	
Author Name: Gwen Hooten, EPA Region 8, with support from RAC6 contractor CH2M HILL	
Author Title: Remedial Project Manager	**Author Affiliation:** EPA Region 8
Review Period: September 2000 through September 2001	
Date(s) of site inspection: March 30, 2001	
Type of review: ☒ Statutory ☐ Policy (☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal Only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion)	
Review number: ☒ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____	
Triggering action: ☐ Actual RA Onsite Construction at OU#__ ☐ Actual RA Start at OU#__ ☐ Construction Completion ☐ Previous Five-Year Review Report ☐ Other (specify) Initiation of well plugging program (part of the Landfill Gas Collection and Treatment Remedy Component)	
Triggering action date (~~from WasteLAN~~): August 7, 1996 from Site Monthly Progress Report No. 20	
Due date *(five years after triggering action date)*: August 7, 2001	

Five-Year Review Summary Form

Issues:

The following issues of concern will require obtaining further information before protectiveness can be determined:

- VOC exceedances in the vicinity of MW38-WD
- VOC exceedances at several compliance monitoring locations along the East/South/West Groundwater Containment, Collection and Diversion Barrier
- Lateral spacing between individual monitoring wells is too large in some areas to detect possible exceedances beyond the Point of Compliance
- Unweathered Dawson and Denver formations have too few monitoring wells to verify containment
- Lignite Layer has too few monitoring wells to verify containment
- VOC exceedances at compliance monitoring wells near the North Boundary Barrier Wall

The following issues of concern do not warrant a finding that the relevant remedy components are not protective in the long-term as long as corrective actions are taken in the immediate future:

- Depressions in southwestern portion of cover and near north center of cover
- Low-level inorganic exceedances at MW43-WD

Addenda to this Five-Year Review will be prepared when adequate information is available to determine the protectiveness of the remedy components associated with the above issues. However, all addenda shall be completed no later than September 30, 2002.

Recommendations and Follow-Up Actions:

The report makes numerous recommendations for additional work at the Site. In general, this work includes activities to define the nature and extent of contamination at several locations beyond the Point of Compliance, as well as work to correct deficient performance of some portions of the remedy (such as the Water Treatment Plant, which must be upgraded to permit operation of another portion of the remedy).

Protectiveness Statement(s):

Because construction of the sitewide remedy is not complete, a sitewide protectiveness statement has not been developed.

Long-Term Protectiveness:

Since the remedy is not complete, long-term protectiveness cannot be assessed at present. It does not appear that there is anything that would prevent this remedy from being protective in the long-term as long as the remedy is completed and work recommended by this Five-Year Review Report is successfully completed.

Other Comments:

The remainder of the remedy should be completed expeditiously.